19th NITROGEN WORKSHOP

Efficient use of different sources of nitrogen in agriculture – from theory to practice

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Abstracts

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FERTILIZATION & ENVIRONMENT JOINT TECHNOLOGICAL NETWORK – CONCEPTS, PROJECTS AND TOOLS USED AROUND FERTILIZATION AND MANAGEMENT OF BIOGEOCHEMICAL CYCLES

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Objectives

Joint technological networks (RMT) are partnership-devices introduced by the French Ministry of Agriculture in 2007 to break down barriers, encourage networking of actors in research, training and development and foster innovation in the fields of agriculture and agro-food. The RMT Fertilization & Environment (F&E) aims to collect, develop and build synergies between existing technical and scientific expertise in the research, educational and agricultural development systems, in order to provide the stakeholders (farmers, agricultural extension agents, trainers, resource and territory managers, government) references, methods and tools for the sustainable management of biogeochemical cycles and soil fertility in the major cropping systems present on the French territory (Metropolitan and Overseas). The network was created in 2007.

Method

The joint technological network RMT Fertilization & Environment brings together 33 partners from research institutes, higher education and technical schools of agriculture and agricultural development bodies from France, Belgium and Switzerland around a work program. The members of the RMT F&E carry out as partners various research and development projects that focus on three thematic priorities: crop fertilization, organic waste products recycling, and control of biogeochemical cycles. While combining plant production and environmental protection, these priorities are part of the principles of agroecology at different spatial and temporal scales, i.e. sparing use and equitable distribution of resources, reduction of inputs, recycling of organic products, ecological intensification, developing and preserving the ecosystem services provided by agriculture and soil.

To carry out its program of activities and achieve the expected results, the coordination team of the RMT F & E organizes the work in four areas, defined by the type of production they generate:

1. Prospective and scientific monitoring, European and international strategy
2. Coordination and sharing around the acquisition of scientific and technical references and appropriation of new paradigms
3. Development and improvement of decision support tools for actors, particularly for fertilization
4. Transfer, dissemination, teaching and training; public policy support.

The activity of the RMT develops through joint meetings, workshops, R & D projects applied to competitive calls, participation in scientific and technical events at national and European levels in which the network members communicate their results.

Results

The results of RMT F & E are of various kinds, depending on the type of activity and the composition of the partnership that produced them:

- State of the art, studies and prospective analyzes, formulating new research questions
- Knowledge, references and common databases, including results from the joint projects
- Conceptual frameworks, methods, flow charts
- Decision support and diagnostic tools (specifications, algorithms, prototypes and marketable tools, computer and agronomic manuals)
- Evaluation of agricultural and environmental policy tools
- Educational tools (including tutorials) for teaching and development, training
- Scientific and technical publications (articles, posters, book chapters, internet pages)
- Scientific seminars, technical conferences.

Among notable productions RMT F & E, we can cite:

- Tools software: Régifert®, diagnostic software and prescription for the elements P, K, Mg, Zn, Mn, B, organic C and acid-base status of the soil; Syst'N®, tool for estimating N losses (NO3, NH3, N2O) diagnostics for the management of N at the scale of crops rotation; AzoFert®, software for fertilizer N recommendation for annual crops, with two variants under development, one suitable for the fertilization of fruit trees and vines (N-Perennes), the other suitable for educational purposes to promote learning of the N dynamics and the N balance method (N'EDU).

- A collective book «Fertilization and environment: What avenues for decision support?" (February 2014, co-published Quae ACTA), results of a prospective reflection on the changing context of fertilization in the coming 5-10 years, and future needs for references, tools and methods for managing the biogeochemical cycles and rational fertilization.

- Scientific and technical support to national public policies particularly with the Nitrates Directive

- Numerous projects on animal manures and organic wastes recycling in agriculture to improve the knowledge on the characterization of organic matters composition, potential mineralization, to improve substitution of mineral fertilizers by organic fertilizers, identification of agricultural practices and techniques that reduce losses of N by nitrate leaching, ammonia volatilization and nitrous oxide emission.

Conclusions

The RMT F & E promotes (i) the sharing of financial and human resources, knowledge, tools and references, avoiding dispersion and duplication, (ii) the development of scientific and technical consensus among its members and beyond, and (iii) the acquisition of a common vision of the major issues related to the management of biogeochemical cycles of main elements in agriculture.

For more information:

http://www.rmt-fertilisationetenvironnement.org

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